

- Fig. 4. Ditto of *Hyæna striata*, Zimmerm.; three-quarter view, to show the anterior tubercle.
 Figs. 5, 6, 7. Ditto of *Hyæna antiqua*, Lankester. Red Crag, Suffolk.
 Fig. 8. Ditto of *Hyæna striata*, Zimmerm. View of the crown of the tooth.
 Fig. 9. Ditto of *Hyæna crocuta*, Bodd.

VIII.—On Species of Ostracoda new to Britain.

By GEORGE S. BRADY.

[Plates III. & IV.]

THE following species of freshwater Entomostraca have been taken during the present year in the counties of Northumberland and Durham. One of them (*Cypris affinis*) is a Continental species, not heretofore recorded as a native of Britain. The rest are now for the first time described. To these descriptions I have appended a few notes on the animal of *Cyprideis torosa* (Jones), and on its occurrence in a recent state in this district.

Fam. Cypridæ.

Subfam. 1. CYPRINÆ (Dana).

Genus CYPRIS, Müller.

Cypris oblonga, n. sp. Pl. III. figs. 1-4.

Elongate, subreniform; lower margin slightly sinuated; upper edge considerably arched, highest in the middle; extremities rounded, the posterior being the more obtuse. Seen from above, the carapace is ovoid in shape, the junction of the valves forming, toward the extremities, a well-marked keel, which is most prominent anteriorly. The valves are clothed with a few scattered hairs, and marked irregularly with one or more transparent patches, which appear light or dark according to the mode of illumination. Colour light brown. Length $\frac{4.8}{1000}$ inch; height $\frac{2.6}{1000}$ inch.

This species is nearly allied to *C. fusca*, which differs from it in being broader and more tumid, as well as in the surface-markings. The abdominal rami of the two species are also different, as may be best seen by a comparison of the figures (Pl. III. figs. 4 & 5). The "lucid spots" are much larger and more distinct in *C. oblonga*. It is perhaps worthy of notice that specimens of *C. fusca*, when steeped in solution of potash, impart to the liquid a beautiful purple colour. I have not noticed this with other species, but should suppose it likely to occur where a sufficiency of brown pigment exists in the shell.

Cypris oblonga was taken in a pond at Fenham, near Newcastle, in April 1863.

Cypris striolata, n. sp. Pl. III. figs. 12-17.

Valves broadly subreniform; dorsal margin greatly arched; ventral margin slightly sinuated; anterior and posterior margins obtusely rounded; the highest part of the carapace somewhat behind the middle. Viewed from above, the carapace is much compressed, and tapering toward the extremities, of which the posterior is more obtusely rounded than the anterior. Surface of the valves smooth, and regularly marked with beautifully fine, anastomosing, longitudinal striations. Colour deep brown. Length $\frac{3}{100}$ inch; height $\frac{2}{100}$ inch.

This approaches very closely to *C. compressa*; and, except in the sculpturing of the carapace (which is very well-marked and characteristic) and the sinuation of its lower margin, I cannot find any feature which distinctly separates it from that species. The valves of *C. compressa* are more or less deeply *pitted*; and in no instance have I been able to find any trace of the striation which distinguishes the present species. The general contour of *C. striolata* is more nearly reniform, the lower edge being decidedly sinuated, and the extremities are not quite so abruptly rounded. It is also larger than *C. compressa*.

Habitat. Broomley Lough, Northumberland. April 1863.

Cypris affinis, Fischer. Pl. III. figs. 6-11.

Cypris affinis, Fischer, Mémoires des Savants Etrangers, St. Petersburg, vol. vii. p. 146, pl. 4. f. 1-11; Lilljeborg, De Crust. ex ord. tribus Cladocera, Ostracoda, et Copepoda in Scania occurrentibus, p. 116, pl. 11. f. 8-14.

Valves elongated, broad anteriorly; upper margin arched, highest a little in front of the centre, and with a slight gibbosity, from which it slopes gently backward; inferior margin sinuated; extremities rounded, the posterior being much the narrowest. Valves sculptured with a reticulated pattern, giving somewhat a scaly appearance to the surface. Seen from above, the carapace is broadly oval in form, with pointed extremities. Colour olive-grey or brown. Length $\frac{4}{100}$ inch; height $\frac{2}{100}$ inch.

This species is easily distinguished by the peculiar sculpturing of the valves, which, in fine specimens and with good illumination under the microscope, resembles an exquisitely wrought pattern of silver filagree-work. The reticulations of which the ornament is composed are largest toward the extremities of the valves: across the middle of the carapace they are not very conspicuous, as the shell-structure is there more condensed. The junction of the open work of the extremities with that of the closer central band is shown in Pl. III. fig. 7. It will be seen

that, though very much compressed, the tendency to a radiate arrangement of the lacunæ (?) is continuous throughout.

I first found this species in a pond at Fenham, near Newcastle, in April of the present year; and it has since been taken by the Rev. A. M. Norman in two ponds near Sedgely, county Durham, and again by myself near Whitburn, in the same county.

Genus CANDONA, Baird.

Candona virescens, n. sp. Pl. IV. figs. 1-5.

Carapace elongated, compressed, rather higher in front than behind; ventral margin slightly sinuated; dorsal margin very gently arched; anterior and posterior margins rounded. Surface of the valves smooth. Seen from above, the carapace is compressed, widest in the middle, and tapering gradually toward the extremities. Colour a delicate sea-green, irregularly variegated with markings of a lighter hue. Filaments of superior antenna five long and seven short. Length $\frac{3.3}{1000}$ inch; height $\frac{1.4}{1000}$ inch.

This species was found in considerable abundance in a shallow weedy pond at Ashburn, near Sunderland, in May 1863. In shape it closely resembles Dr. Baird's figures of *C. similis*; and some specimens have, when fresh, two dark spots, which however disappear on drying: they seem to correspond with the eye- and muscle-spots. When I first found my specimens, I supposed that they might prove to be merely the young of *C. reptans*, as they are not unlike in shape to that species, though much paler in colour. But the absence of any brush of setæ on the lower antenna is of itself a sufficient character to separate the two species. I find that even the very youngest specimens of *C. reptans* possess these setæ quite distinctly developed.

Candona albicans, n. sp. Pl. IV. figs. 6-10.

Valves oblong. Dorsal margin straight, curving abruptly at the posterior extremity, and more gradually in front; ventral margin *deeply* sinuated; extremities obtusely rounded off. Surface of the valves uniformly and closely punctated, with a few scattered slender hairs round the anterior and posterior margins. Seen from below, the carapace is flattened, ovate, and produced into a fillet at the anterior extremity. Colour opake white, uniform or with pellucid patches. Length $\frac{3.0}{1000}$ inch; height $\frac{1.6}{1000}$ inch.

I took a single specimen of *C. albicans* (from which the accompanying drawings were made) in fresh water near Sunderland, in 1861. It has been found plentifully this year, in a

small grassy pond near Sedgefield, by the Rev. A. M. Norman, in company with *C. lucens*, *Cypris tristriata*, *C. affinis*, *C. ovum*, &c. With reference to his specimens, Mr. Norman remarks: "This species approaches very near to *C. lactea* (Baird), but is wider in proportion to its length, is not so ventricose, and wants the conspicuous encircling fillet of that species. The surface in *C. albicans* is excavated with very numerous, small, shallow pits; but in *C. lactea* it is only sparingly and finely punctate."

Subgenus CYPRIDEIS, Jones.

Cyprideis torosa, Jones. Pl. IV. figs. 11-23.

Cyprideis torosa, Jones, Entomostraca of the Tertiary Formation of England, 1856, p. 21, pl. 2. figs. 1 a-1 i, and woodcut, fig. 2, p. 16.
Candona torosa, Jones, Ann. & Mag. Nat. Hist. ser. 2, 1850, vi. p. 27, pl. 3. fig. 6.

Valves oblong, convex, somewhat broader in front than behind. Ventral margin straight, or with a *very slight* sinuation, mostly furnished with a single stout spine at the posterior angle; dorsal margin arched, higher anteriorly. Hinge-margin of the right valve bearing a series of corrugations or elongated tubercles, which are received into corresponding depressions of the opposite valve. Extremities obtusely rounded. The right valve is smaller than the left, and has the dorsal margin inclined more steeply, and almost in a right line, from before backwards. "Surface of the valves marked with closely set angular pittings," and with a more or less conspicuous transverse sulcus somewhat in front of the centre. Young specimens are sometimes furnished also with a few short, thinly scattered hairs, and at the postero-inferior angle, near the spine before mentioned, there is often a conspicuous group of rather long hairs. Lucid spots arranged in a transverse row of about four near the sulcus. Dorsal aspect ovate, irregularly and obsoletely angular. Length $\frac{3}{1000}$ inch; height $\frac{2}{1000}$ inch.

The occurrence of this species in a recent state was first mentioned by Professor T. Rupert Jones (*loc. cit.*), who obtained it from ditches of brackish water at Gravesend, and who has kindly supplied me with specimens from that locality for examination. These ditches are now, I believe, nearly silted up with mud and decomposing matter. It has also been taken by the Rev. A. M. Norman on the sands at Weston-super-Mare, to which position it had probably been washed by the Uphill River. Mr. Norman has recently taken it in fresh water in the "Forge Dam," Sedgefield, and in immense profusion in brackish water at Hartlepool. Lastly, I have myself found it in extraordinary numbers in estuarine pools at Warkworth.

The following table indicates the Crustacea with which *C. torosa* was found associated in the localities above specified :—

Sedgefield. (fresh water).	Gravesend. (brackish).	Hartlepool. (brackish).	Warkworth. (brackish).
Cypris ovum. — gibba. — punctillata. Candona serrata — reptans &c. &c.	Crangon vulgaris. Cypris gibba. — aculeata. Candona lucens.	Palæmon varians.	Crangon vulgaris. Gammarus locusta.

The animal of *C. torosa* differs only very slightly from that of the genus *Cythere*. The limbs (except the first pair of legs, of which, owing to their minute size, I have not been able to obtain a satisfactory drawing) are represented in Pl. IV. figs. 11–15. The only characters by which I can distinguish them from the limbs of *Cythere* are the absence, from the second joint of the inferior antenna, of the long stout seta which is always found in that genus, and the presence, on the coxæ of the last pair of legs, of four or five rows of long hairs having apparently a semiverticillate arrangement. The tufts of bristles which occur in other situations are similar in disposition to those of *Cythere*. Some of the longer setæ or hairs are terminated with a peculiar ringed and serrated armature, which is shown at fig. 15. This character is always confined to certain hairs, which are constant in position, and is found likewise in *Cythere*. I have not been able, in my recent specimens of *C. torosa*, to detect the regular tuberculation figured and described by Mr. Jones: but there is much difference in the various specimens, according to age and locality; and it is evident that considerable latitude must be allowed in this as well as in the spinous armature of the carapace. In comparatively few of the Gravesend specimens have I found any appearance of the single spine, while in those from Warkworth it is almost constant. I have frequently, in examining *C. torosa*, found the carapace almost filled posteriorly with a very large mass of ova. This fully accounts for the prodigious quantities in which the species is found in favourable localities, such as those at Hartlepool and Warkworth, and is the more remarkable, as in *Cythere*, so far as I have observed, the ova are very few in number.

Sunderland, Nov. 23, 1863.

EXPLANATION OF THE PLATES.

PLATE III.

Fig. 1. *Cypris oblonga* (Brady), dorsal aspect; $\times 30$.
Fig. 2. Ditto, ventral aspect; $\times 30$.

- Fig. 3. *Cypris oblonga* (Brady), left valve; $\times 30$.
 Fig. 4. Ditto, abdominal ramus; $\times 120$.
 Fig. 5. *Cypris fusca*, abdominal ramus; $\times 120$.
 Fig. 6. *Cypris affinis* (Fischer), abdominal ramus; $\times 120$.
 Fig. 7. Ditto, shell-sculpture; $\times 310$.
 Fig. 8. Ditto, lucid spots; $\times 120$.
 Fig. 9. Ditto, ventral aspect; $\times 40$.
 Fig. 10. Ditto, dorsal aspect; $\times 40$.
 Fig. 11. Ditto, right valve; $\times 40$.
 Fig. 12. *Cypris striolata* (Brady), left valve; $\times 40$.
 Fig. 13. Ditto, dorsal aspect; $\times 40$.
 Fig. 14. Ditto, ventral aspect; $\times 40$.
 Fig. 15. Ditto, shell-sculpture; $\times 310$.
 Fig. 16. Ditto, lucid spots; $\times 310$.
 Fig. 17. Ditto, abdominal ramus; $\times 210$.

PLATE IV.

- Fig. 1. *Candona virescens* (Brady), right valve; $\times 40$.
 Fig. 2. Ditto, dorsal aspect; $\times 40$.
 Fig. 3. Ditto, ventral aspect; $\times 40$.
 Fig. 4. Ditto, superior antenna; $\times 100$.
 Fig. 5. Ditto, inferior antenna; $\times 100$.
 Fig. 6. *Candona albicans* (Brady), left valve; $\times 40$.
 Fig. 7. Ditto, dorsal aspect; $\times 40$.
 Fig. 8. Ditto, ventral aspect; $\times 40$.
 Fig. 9. Ditto, shell-sculpture; $\times 210$.
 Fig. 10. Ditto, lucid spots; $\times 210$.
 Fig. 11. *Cyprideis torosa* (Jones), superior antenna; $\times 100$.
 Fig. 12. Ditto, inferior antenna; $\times 100$.
 Fig. 13. Ditto, second leg; $\times 100$.
 Fig. 14. Ditto, third leg $\times 100$.
 Fig. 15. Ditto, ringed seta; $\times 400$.
 Figs. 16-18. Ditto, outlines of carapace (Gravesend specimens); $\times 20$.
 Figs. 19-21. Ditto, outlines of carapace (Warkworth specimens); $\times 20$.
 Fig. 22. Ditto, posterior margin, with spine; $\times 20$.
 Fig. 23. Ditto, ditto, with ova; $\times 40$.

IX.—On the Foraminifera of the Crag.

By Prof. T. R. JONES, F.G.S., and W. K. PARKER, Esq.

THE chief material we have had for examination in studying the Foraminifera of the Crag of Suffolk and adjacent counties is a collection liberally placed at our disposal by Mr. S. V. Wood, F.G.S., and made by him from the Crag at and near Sutton in Suffolk. This collection was referred to by Mr. Charlesworth, in May 1835, in a paper, read by him before the Geological Society of London, "On the Crag of part of Essex and Suffolk" (Proc. Geol. Soc. vol. ii. pp. 195, 196), in which he mentioned that "for his general information respecting the organic remains in the two beds" of the Crag he was indebted to Mr. Searles Wood (then of Hasketon, near Woodbridge), whose collection of Crag fossils included "fifty species of minute Cephalopods,"—Fora-